Amendments to the Claims

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims

1. (original) A device for measuring the velocity of a target comprising:

an array of vertical cavity surface emitting lasers having an energy output;

a first lens configured to capture the energy output of said array of vertical cavity surface emitting lasers and project it onto said target whose velocity is to be monitored;

a second lens configured to capture the energy output reflected from said target ; and

at least one detector configured to detect energy transmitted from said second lens;

wherein said energy of said array of vertical cavity surface emitting lasers projected onto said target creates pulses of light from reflectance off of surface imperfections on said target , and the velocity of said target is determined by monitoring the frequency of said pulses of light.

2. (original) The device of claim 1, wherein said array of vertical cavity surface emitting lasers comprises at least 10 vertical cavity surface emitting lasers.

3. (original) The device of claim 2, wherein said array of vertical cavity surface emitting lasers comprises at least 16 vertical cavity surface emitting lasers.

4. (original) The device of claim 1, wherein said array of vertical cavity surface emitting lasers emits light with a wavelength of from about 10^{-7} to 10^{-8} m.

5. (original) The device of claim 4, wherein said array of vertical cavity surface emitting lasers emits light with a wavelength of from about 4×10^{-7} to 8×10^{-7} m.

6. (original) The device of claim 5, wherein said array of vertical cavity surface emitting lasers emits light with a wavelength of from about $6x10^{-7}$ to $7x10^{-7}$ m.

7. (original) The device of claim 1, wherein said array of vertical cavity surface emitting lasers is at least a one- -dimensional array.

8. (original) The device of claim 7, wherein said array of vertical cavity surface emitting lasers is a one-dimensional array.

9. (original) The device of claim 7, wherein said array of vertical cavity surface emitting lasers is a two-dimensional array.

10. (original) The device of claim 1, wherein said vertical cavity surface emitting lasers comprising said array are placed from about 10 to 500 μm apart.

11. (original) The device of claim 10, wherein said lasers are placed from about 25 to 150 μm apart.

12. (original) The device of claim 11, wherein said vertical cavity surface emitting lasers are placed from about 50 to 100 μm apart.

13. (original) A method of measuring the velocity of a target comprising:

projecting an image of a vertical cavity surface emitting laser array onto said target;

monitoring the intensity pattern formed from said image reflecting off of the target with at least one light intensity detector to produce an analog signal;

converting said analog signal to a digital signal with the same frequency;

measuring said frequency of said digital signal with a first counter; and

processing said frequency with a microprocessor to determine the velocity of said target.

14. (original) The method of claim 13, further comprising measuring said frequency of said digital signal with a second counter in order to verify the data by comparing said measured frequencies.

15. (original) The method of claim 14, wherein said verification is accomplished by having said second counter count for twice as long as said first counter, and said frequency measurement is not considered valid if there is not twice the number of counts obtained from said second counter.

16. (currently amended) The method of claim 13, further comprising obtaining ~~at least one~~ two or more velocity measurements of said target and determining the average of ~~said multiple~~ selected ones of said two or more velocity measurements.

17. (original) A device for measuring the velocity of a target comprising:

an array of vertical cavity surface emitting lasers having an energy output;

at least one first optic device configured to capture the energy output of said array and project it onto said target whose velocity is to be monitored;

at least one second optic device configured to capture the energy output from said target; and

at least one detector configured to detect energy transmitted from said second optic device;

wherein said energy of said array of vertical cavity surface emitting lasers that is projected onto said target creates pulses of light corresponding to surface imperfections on said target, and the velocity of said target is determined by monitoring said pulses of light.

18. (original) A device for measuring the velocity of a monitored area comprising:

an array of vertical cavity surface emitting lasers, having an energy output;

at least one detector; and

an optical path between the array and the at least one detector, wherein the optical path provides a path for the energy output of said array of vertical cavity surface emitting lasers; and

wherein the at least one detector is configured to detect energy from said array of vertical cavity surface emitting lasers; and

wherein said energy received by said at least one detector corresponds to surface imperfections on said monitored area whose velocity is to be monitored.

19. (new) The device of claim 1, wherein the array of vertical cavity surface emitting lasers produces an array of source light spots, and the first lens is adapted to project the array of source light spots onto the target such that a corresponding array of target light spots are present on the target.

20. (new) The device of claim 19, wherein the source light spots are spaced from one another.

21. (new) The device of claim 20, wherein the target light spots are spaced from one another.

22. (new) The method of claim 13 wherein the projecting step projects an array of light spots onto the target.

23. (new) The device of claim 22, wherein the light spots are spaced from one another.

24. (new) The device of claim 17, wherein the array of vertical cavity surface emitting lasers produces an array of source light spots, and the first optic device is adapted to project the array of source light spots onto the target such that a corresponding array of target light spots are present on the target.

25. (new) The device of claim 24, wherein the source light spots are spaced from one another.

26. (new) The device of claim 25, wherein the target light spots are spaced from one another.